

CLAIMS

1. An ink-jet ink, comprising
 - a) a liquid vehicle; and
 - 5 b) a polymer-dispersed pigment dispersed in the liquid vehicle, said polymer-dispersed pigment including a pigment encapsulated with a polymer, said polymer being a polymerization product of at least a first monomer having a hydrophilic group, and a second monomer having a hydrophobic group, wherein the polymer-dispersed pigment is stable in the liquid vehicle at a pH from about
- 10 5.5 to about 8.5.
2. An ink-jet ink as in claim 1, wherein the hydrophilic group is selected from the group consisting of sulfonic acid, fluoric acids, α - and/or β -fluorocarboxylic acids, and combinations thereof.
- 15 3. An ink-jet ink as in claim 2, wherein the hydrophilic group is a sulfonic acid.
4. An ink-jet ink as in claim 1, wherein the first monomer is selected from
- 20 the group consisting of vinyl sulfonic acid, 4-styrenesulfonic acid, trifluoroacrylic acid, tetrafluorostyrene-4-carboxylic acid, α -trifluoromethyl acrylic acid, difluoromaleic anhydride, and combinations thereof.
5. An ink-jet ink as in claim 4, wherein the first monomer is vinyl sulfonic
- 25 acid.
6. An ink-jet ink as in claim 1, wherein the first monomer is used to form from about 10 wt% to about 50 wt% of the polymer.
7. An ink-jet ink as in claim 1, wherein the hydrophobic group is selected from the group consisting of aromatic, aliphatic, alicyclic, heterocyclic, and combinations thereof.
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8. An ink-jet ink as in claim 1, wherein the hydrophobic group is phenyl.

5 9. An ink-jet ink as in claim 1, wherein the second monomer is selected from the group consisting of styrene, cinnamic acid, 4-alkylstyrene, and combinations thereof.

10 10. An ink-jet ink as in claim 1, wherein the second monomer is used to form from about 25 wt% to about 80 wt% of the polymer.

11. An ink-jet ink as in claim 1, wherein the polymer is further a polymerization product of a third monomer.

15 12. An ink-jet ink as in claim 1, wherein the polymer is a styrene-vinylsulfonic acid copolymer.

13. An ink-jet ink as in claim 1, wherein the polymer is a styrene-butyl acrylate-methacrylic acid-vinylsulfonic acid copolymer.

20 14. An ink-jet ink as in claim 1, wherein the polymer is a styrene-trifluoroacrylic acid-vinylsulfonic acid copolymer.

25 15. An ink-jet ink as in claim 1, wherein the polymer is a styrene- α -(trifluoromethyl)acrylic acid-vinylsulfonic acid copolymer.

16. An ink-jet ink as in claim 1, wherein the polymer is a styrene-trifluoro acrylic acid copolymer.

30 17. An ink-jet ink as in claim 1, wherein the polymer-dispersed pigment is stable in the liquid vehicle at a pH from about 6.5 to about 7.5.

18. A system for printing an image, comprising:

a) a substrate; and
b) a first ink-jet pen containing a first ink-jet ink, said first ink-jet ink pen configured for printing the first ink-jet ink on the substrate, said first ink-jet ink including a first polymer-dispersed pigment dispersed in a first liquid vehicle, said polymer-dispersed pigment having a first pigment encapsulated with a first polymer, said polymer being a polymerization product of at least a first monomer having a hydrophilic group and a second monomer having a hydrophobic group.

19. A system as in claim 18, wherein the hydrophilic group is selected from the group consisting of sulfonic acid, fluoric acids, α - and/or β -fluorocarboxylic acids, and combinations thereof.

20. A system as in claim 19, wherein the hydrophilic group is a sulfonic acid.

21. A system as in claim 18, wherein the first monomer is selected from the group consisting of vinyl sulfonic acid, 4-styrenesulfonic acid, trifluoroacrylic acid, tetrafluorostyrene-4-carboxylic acid, α -trifluoromethyl acrylic acid, difluoromaleic anhydride, and combinations thereof.

22. A system as in claim 18, wherein the first monomer is used to form from about 10 wt% to about 50 wt% of the polymer.

23. A system as in claim 18, wherein the second monomer is selected from the group consisting of styrene, cinnamic acid, 4-alkylstyrene, and combinations thereof.

24. A system as in claim 18, wherein the second monomer is used to form from about 25 wt% to about 80 wt% of the polymer.

25. A system as in claim 18, wherein the polymer is further a polymerization product of a third monomer.

26. A system as in claim 18, wherein the polymer is selected from the group consisting of styrene-vinylsulfonic acid copolymer, styrene-butyl acrylate-methacrylic acid-vinylsulfonic acid copolymer, styrene-trifluoroacrylic acid-vinylsulfonic acid copolymer, styrene- α -(trifluoromethyl)acrylic acid-vinylsulfonic acid copolymer, and styrene-trifluoro acrylic acid copolymer.

27. A system as in claim 18, further comprising a second ink-jet pen containing a second ink-jet fluid, said second ink-jet fluid including a cationic component configured for reduced bleed when printed adjacent to the first ink-jet ink.

28. The system as in claim 27, wherein said second ink-jet fluid includes a pigment.

29. The system as in claim 18, wherein the first polymer-dispersed pigment is stable in the first liquid vehicle at a pH from about 6.5 to about 7.5.

30. A method of printing an image, comprising ink-jetting an ink-jet ink onto a media substrate, said ink-jet ink including:

- a) a liquid vehicle; and
- b) a polymer-dispersed pigment dispersed in the liquid vehicle, said polymer-dispersed pigment including a pigment encapsulated with a polymer, said polymer being a polymerization product of at least a first monomer having a hydrophilic group, and a second monomer having a hydrophobic group, wherein the polymer-dispersed pigment is stable in the liquid vehicle at a pH of from about 5.5 to about 8.5.

31. A method as in claim 30, wherein the first monomer is selected from the group consisting of vinyl sulfonic acid, 4-styrenesulfonic acid, trifluoroacrylic acid, tetrafluorostyrene-4-carboxylic acid, α -trifluoromethyl acrylic acid, difluoromaleic anhydride, and combinations thereof.

32. A method as in claim 30, wherein the first monomer is used to form from about 10 wt% to about 50 wt% of the polymer.

5 33. A system as in claim 30, wherein the polymer is selected from the group consisting of styrene-vinylsulfonic acid copolymer, styrene-butyl acrylate-methacrylic acid-vinylsulfonic acid copolymer, styrene-trifluoroacrylic acid-vinylsulfonic acid copolymer, styrene- α -(trifluoromethyl)acrylic acid-vinylsulfonic acid copolymer, and styrene-trifluoro acrylic acid copolymer.

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34. The method as in claim 30, further comprising ink-jetting a second ink-jet fluid, said second ink-jet fluid including a cationic component configured for reduced bleed when printed adjacent to the first ink-jet ink.

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35. The method as in claim 34, wherein the second ink-jet fluid includes a cationically-dispersed pigment.

36. The method as in claim 30, wherein the polymer-dispersed pigment is stable in the liquid vehicle at a pH from about 6.5 to about 7.5.